

U.S. Patent Application Serial No. 09/980,329
Applicant: Talish, et al.
Amendment and Response
Page 2 of 13

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AMENDMENTS TO THE CLAIMS

A single version of all claims that are, or were, in the application, are marked up to show all the changes relative to the previous version of the claims, is now set forth, with deleted text shown by ~~strikethrough~~ and added text shown by underlining:

1. (Currently Amended) A method for accelerating a healing process for an injury using ultrasound, the method comprising the steps of
~~providing a kit comprising a main operating unit, a placement module, an ultrasonic source, a pouch, and a syringe;~~
introducing a capsule comprising a piezoelectric sensor and an ultrasound contrast agent into a patient, wherein the ultrasound contrast agent is adapted to accelerate a healing process for an injury upon application of ultrasound;
mounting the ultrasonic source to the patient;
transmitting an acoustic signal to the piezoelectric sensor instructing the capsule to release a portion of the ultrasound contrast agent, wherein the release of the ultrasound contrast agent is specifically targeted to the proximity of the injury; and
impinging ultrasonic waves in proximity to the injury, wherein the ultrasound contrast agent facilitates in lowering the cavitation threshold to an intensity level attainable by the ultrasonic waves.

2. (Previously Presented) The method according to Claim 1, further comprising the step of maintaining the acoustic spatial average-temporal average (SATA) intensity of the ultrasonic waves from about 5 to 500 mW/cm².

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U.S. Patent Application Serial No. 09/980,329
Applicant: Talish, et al.
Amendment and Response
Page 3 of 13

3. (Original) The method according to Claim 1, wherein the ultrasound contrast agent is comprised of microbubbles having a radius from 0.1 to 10.0 μ m.

4. (Original) The method according to Claim 3, further comprising the step of maintaining the resonance bubble frequency of the microbubbles from 0.5 MHz to 10 MHz.

5. (Original) The method according to Claim 1, further comprising the step of maintaining the acoustic transmit frequency of the ultrasonic waves from 10 kHz to 10 MHz.

6. (Original) The method according to Claim 1, further comprising the step of terminating the impinging step after approximately thirty minutes.

7. (Original) The method according to Claim 1, wherein the step of introducing comprises the step of time-releasing the ultrasound contrast agent into the patient.

8. (Previously Presented) The method according to Claim 1, wherein the step of introducing comprises the step of using the syringe to intravaneously introduce the ultrasound contrast agent into the patient.

9. (Original) The method according to Claim 1, wherein the step of introducing comprises the steps of:

placing the ultrasound contrast agent within a timed-release capsule; and

placing the timed-release capsule within the patient.

10. (Cancelled).

11. (Currently Amended) A kit for accelerating a healing process for an injury upon application of ultrasound, the kit comprising:

U.S. Patent Application Serial No. 09/980,329
Applicant: Talish, et al.
Amendment and Response
Page 4 of 13

an ultrasonic transducer assembly having at least one ultrasonic transducer, wherein the ultrasonic transducer assembly is adapted to be mounted to a patient's body;

an ultrasonic signal generator coupled to the ultrasonic transducer assembly;

a main operating unit electrically coupled to the ultrasonic signal generator for transmitting at least one signal thereto activating the at least one ultrasonic transducer;

a delivery/release system capable of introducing an ultrasound contrast agent into a portion of a patient's body, wherein the introduction of the ultrasound contrast agent is specifically targeted to the proximity of an injury; and

an ultrasound contrast agent adapted to accelerate a healing process for an injury upon application of ultrasound, and further adapted to be released from a capsule comprising a piezoelectric sensor capable of receiving an acoustic signal instructing the capsule to release a portion of the ultrasound contrast agent.

12. (Original) The kit according to Claim 11, wherein the ultrasound contrast agent is housed within a syringe.

13. (Previously Presented) The kit according to Claim 11, wherein the delivery/release system comprises a timed-release capsule to house the ultrasound contrast agent.

14. (Previously Presented) The kit according to Claim 11, wherein the delivery/release system houses the ultrasound contrast agent, wherein the delivery/release system comprises means for responding to the ultrasonic waves.

U.S. Patent Application Serial No. 09/980,329
Applicant: Talish, et al.
Amendment and Response
Page 5 of 13

15. (Original) The kit according to Claim 11, wherein the ultrasound contrast agent is comprised of microbubbles having radii from 0.1 to 10.0 μ m.

16. (Original) The kit according to Claim 11, further comprising a placement module configured to be worn by a patient, the placement module being configured to receive the transducer assembly such that when the placement module is worn the at least one ultrasonic transducer is positioned in proximity to the injury.

17. (Previously Presented) The kit according to claim 11, wherein the ultrasonic signal generator includes signal generator circuitry and an internal power source connected to the signal generator circuitry.

18. (Original) The kit according to Claim 11, wherein the main operating unit is positioned within a pouch worn by the patient to permit portable operation thereof.

19. (Original) The kit according to Claim 11, further comprising a gel-like substance for acoustically coupling the ultrasonic waves, emitted by the at least one ultrasonic transducer, to the body of the patient.

20. (Currently Amended) A method for accelerating a healing process for an injury upon application of ultrasound, the method comprising the steps of:

providing a main operating unit having an internal power source coupled to an ultrasonic transducer assembly, the ultrasonic transducer assembly includes at least one ultrasonic transducer, an ultrasonic signal generator and signal generator circuitry therein, wherein the ultrasonic transducer assembly is adapted to be mounted to a patient's body;

U.S. Patent Application Serial No. 09/980,329
Applicant: Talish, et al.
Amendment and Response
Page 6 of 13

providing a placement module configured for receiving the ultrasonic transducer assembly and for placing the at least one ultrasonic transducer in proximity to the injury;

providing a syringe capable of introducing a capsule comprising a piezoelectric sensor and an ultrasound contrast agent into the patient;

introducing via the syringe a capsule comprising a piezoelectric sensor and an ultrasound contrast agent into the patient, wherein the ultrasound contrast agent is adapted to accelerate a healing process for an injury upon application of ultrasound, and the piezoelectric sensor is capable of receiving an acoustic signal to release at least some of the ultrasound contrast agent inside the patient;

transmitting an acoustic signal to the piezoelectric sensor instructing the capsule to release a portion of the ultrasound contrast agent in proximity to the injury; and

exciting the at least one ultrasonic transducer to impinge ultrasonic waves at or near the injury, wherein the ultrasound contrast agent facilitates in lowering the cavitation threshold to an intensity level attainable by the ultrasonic waves.

21. (Original) The method according to Claim 3, wherein the radii of the microbubbles of the ultrasound contrast agent are less than 7.0 μm .
22. (Currently Amended) The method according to Claim 10 1, wherein the step of transmitting a signal to the piezoelectric sensor comprises instructing the capsule to release the ultrasound contrast agent in preset amounts at multiple predetermined time intervals.
23. (Previously Presented) The kit according to Claim 15, wherein the radii of the microbubbles of the ultrasound contrast agent are less than 7.0 μm .

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U.S. Patent Application Serial No. 09/980,329

Applicant: Talish, et al.

Amendment and Response

Page 7 of 13

24. (Previously Presented) The kit according to Claim 17, wherein the signal generator circuitry comprises a processor and means for generating a pulsed RF signal.